# Survival Rates and Mortality Factors of Elk in the South Fork of the Flathead River, Montana[TWS]

John Vore

Wildlife Division, Montana Fish, Wildlife and Parks, 490 Meridian Rd. Kalispell, MT 59901

We investigated survival rates and mortality factors of elk >1 year old on 2 project areas in the South Fork of the Flathead River, Montana from 1989 through 1997. On the Firefighter project area mean annual survival of cows (n=84) was

0.85±0.13. On the Spotted Bear project area (n=23) it was 0.84 ±0.16 and did not differ from that at Firefighter (p=.23). At Firefighter, survival of cows during the latter half of the study (6/15/93 - 6/15/97) was greater than during the first half (6/15/89 - 6/15/93) (mean annual survival=.89 and .82 respectively, p=.04). Possible reasons are discussed. Sample size precluded a similar test at Spotted Bear. Fifty-seven percent of deaths among cows (n=39) were somehow human-related. Causes of death were: 41 % hunting, 28% winterkill/natural causes, 13%-wounding loss, 10% predation, 5% unknown, and 3% poaching. Survival among bulls from both project areas combined (n=20) was 0.69±0.22 and differed from that of cows on either project area (p<.02). Among, 17 bull deaths, 15 (88%) were by hunting, 1 (6%) by wounding loss, and 1(6%) by winterkill. The management implications of this level of human-caused deaths among both sexes of elk in habitat generally considered secure are discussed.